NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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The Renal Excretion of Atabrine (Quinacrine): Some recent studies by Emerson and Dole of the renal excretion of atabrine are of considerable interest.

Measurements were made of the renal atabrine clearance, which is the ratio of urinary excretion rate to plasma concentration. Preliminary studies

indicated that the renal clearance of atabrine was subject to as much as one hundred-fold variation. This variation is principally due to two variables - the urinary pH and the renal plasma flow.

That the pH of the urine might influence the excretion rate was suspected from the striking shift with pH of atabrine distribution between water and organic solvents. Since the barrier to back diffusion from concentrated urine in the renal tubules is in part lipid, it is reasonable that lipid-soluble compounds will be more extensively reabsorbed. In conformance with the fact that atabrine passes largely into the lipid phase when alkaline and into the aqueous phase when acid, it was found that the atabrine clearance approached zero at the highest attainable pH values, in the neighborhood of 8.0. This suggests practical equilibration of atabrine between tubular urine and blood. With urine increasingly acid the atabrine clearance rose in a roughly linear fashion to the high values of 300 to 500 c.c./min. at a pH around 4.8. The slope of this line, however, varied both among individuals and among different experiments on the same subject.

With a view to understanding the cause of the variable slope of the clearance-pH line, two experiments were done in which renal plasma flow was estimated from hippurate clearances simultaneously with observation of atabrine clearance and variation of urinary pH. These experiments suggest that the renal plasma flow is a second variable responsible for variation in atabrine clearance, since at a given pH the ratio atabrine clearance: hippurate clearance was the same for the two subjects within the limits of experimental variation. In one subject both the atabrine clearance and the hippurate clearance, at the same urinary pH, were almost twice as great as in the other subject.

Roughly, atabrine clearance appeared to approach hippurate clearance at a pH in the neighborhood of 4.7. This relationship is consistent with the assumption that atabrine is actively excreted by the tubules and that, as a result of urinary pH changes, variation occurs either in the percentages of atabrine reabsorbed in the tubules or in the rate of active tubular excretion.

From the practical side these findings suggest that it is not profitable to attempt to use urinary atabrine excretion as an indicator of plasma atabrine concentration, since excretion measurements, even though precise, would bear no useful relation to the plasma concentration or to the degree of saturation of body tissue.

The second practical matter is that the urinary pH to some extent influences the dosage of atabrine required to maintain an effective plasma level. This fact may be one reason why some individuals fail to maintain desired plasma atabrine levels under therapy, and may also give some basis for the old empirical custom of supplementing malaria therapy with alkali.

Finally, it was noticed that in the course of a few hours large changes in plasma atabrine concentration could occur, perhaps in part owing to variation in urinary excretion. For this reason the plasma atabrine level can be taken only with qualifications as a measure of the atabrine tissue saturation. (From the Naval Research Unit at the Hospital of the Rockefeller Institute for Medical Research.)

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Factors Affecting Excretion of Atabrine (Quinacrine) in the Urine: Certain British workers, on the other hand, have conducted experiments which tend to show that the amount of atabrine excreted in the urine is closely related to the ammonia excretion and less closely related to the plasma level of the drug. They conclude that it is not significantly related to pH, titratable acidity, buffering power, or urine volume.

They have devised an equation expressing plasma atabrine in terms of urinary atabrine and ammonia:

$$Y = 0.12X - 1.28A + 35.0$$

where Y = plasma atabrine in micrograms per liter, X = urinary atabrine output in micrograms per 2 hours, and A = urinary ammonia nitrogen output in mg. per 2 hours.

These investigators believe that the value of this equation for predicting plasma atabrine concentration requires further study. (Malaria Research Unit, Oxford, Interim Report No. 20, August 1944: "Factors Affecting Urinary Mepacrine Excretion. Acid-Base Balance. A Preliminary Report." CMR Bulletin, Sept. 18, '44.)

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Effect of Ammonium Ion on Plasma Atabrine (Quinacrine) Levels: In preparing plasma for the determination of the concentration of atabrine, various anticoagulants are used, among them potassium oxalate, sodium oxalate, ammonium oxalate, sodium citrate and heparin. It has recently been found that if the anticoagulant used contains the ammonium ion, the concentration of atabrine in the plasma of subjects receiving this drug appears to be greater than that observed when the plasma is prepared with anticoagulants not containing this ion. Therefore, ammonium oxalate or any salt mixture containing ammonium ion (e.g., Wintrobe's Salt Mixture) should not be used as an anticoagulant in the preparation of the plasma for atabrine determinations. Potassium oxalate, sodium citrate and heparin are satisfactory anticoagulants. (Malaria Research Unit, Oxford, Interim Rep. #18, Aug. '44.)

The Effect of Atabrine (Quinacrine) on the Bacterial Flora of the Feces: It has been suggested that the diarrhea present in some subjects during atabrine administration might be explained by an action of atabrine on the bacterial flora of the gastrointestinal tract.

Investigations have been made to determine whether the administration of a suppressive dose of atabrine over a long period, or the administration of a single large dose of atabrine, is followed by any change in the characteristics of the fecal flora. No significant difference was found between the flora of the feces of subjects who had received a four months' suppressive course of atabrine, and the flora of the feces of subjects who had never received the drug. Large doses of atabrine (0.6 to 1.0 Gm.) did not significantly alter the flora of the feces. Two patients suffering from chronic ulcerative colitis were given a course of atabrine (0.1 Gm. daily for a fortnight). This caused no significant change in the symptoms or general condition of the patient, and there was no significant change in the bacterial flora of the stool. (Malaria Research Unit, Oxford, Interim Rep. #19, Aug. '44.)

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The Effect of Atabrine (Quinacrine) on the Gastrointestinal Tract of Rats: A technic has been developed by which the effect of drugs on the gastrointestinal tract of intact unanesthetized rats may be studied. It consists in giving bismuth meals to the rats and observing roentgenologically the rate of passage.

The effects of atabrine on the gastrointestinal tract of the rat are: hypertonicity and disturbed peristalsis in the stomach, pylorospasm, increased gastric secretion, delay in gastric emptying, increased accumulation of gas in the stomach and cecum, and slight delay in the rate of passage of the bismuth meal through the small intestine.

A quantitative estimate of the severity of the effect may be made by determining the length of time required for the stomach to empty.

With this new technic it will be possible to make comparisons between the effects on the gastrointestinal tract of the different salts of atabrine and of the different methods of administering the dihydrochloride, as well as to study the gastrointestinal effects of new antimalarial drugs. (Malaria Research Unit, Oxford, Interim Rep. #15, June 24, '44.)

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The Origin of Mite Infections in Epidemics of Tsutsugamushi Disease: The occurrence of epidemics of tsutsugamushi disease among allied military and naval forces in areas formerly occupied by the Japanese suggests the

possibility that the infected trombiculid larvae (chiggers) in these areas have become infected as the result of attacks on infected Japanese personnel. The likelihood that this is the mode of infection is somewhat enhanced by the fact that the rickettsiae can be transmitted from generation to generation of the mites through the ova, thereby allowing the infection to persist in the mite population for a considerable period following the evacuation of these areas by the Japanese. The available information, however, indicates that infected human cases as a source of infection to the chigger population are probably of minor importance. In rearing experiments with the Nearctic Eutrombicula alfredugesi and the Oriental Trombicula akamushi the larvae failed to undergo metamorphosis after feeding on man. This is reasonable in view of the fact that these species as well as other chiggers which attack man are normally ectoparasites of various mammals and birds. The available information indicates further that chiggers feed only once and on but a single host. It therefore appears probable that those which attack man do not metamorphose into nymphs and therefore cannot serve as transmittors of the rickettsiae. Furthermore, should chiggers occasionally survive following a human meal, their chances of being infected are small because of the relatively brief infective stage in human cases. The chances are reduced further by the fact that hospitalized cases are not ordinarily exposed to attacks by chiggers.

Careful consideration of the available experimental data and observations leads to the conclusion that tsutsugamushi disease is an enzootic (perhaps occasionally epizootic) rickettsiosis of various species of wild mammals (perhaps some species of birds also) which is transmitted among these reservoirs by chiggers of various species. Man becomes infected when he invades the ecologic niche of the chiggers, infected (via the ova of the infected female parent) from the reservoir hosts, and is attacked by them. Since chiggers take a single meal, transmission of the rickettsiae to another reservoir host or to man is delayed at least one generation. Because of this "inheritance" of the rickettsiae, it is possible that epizootics involving large numbers of chiggers may not be reflected as epidemics until several seasons have passed. In other words, the passage from man to chigger is very unlikely; a more likely sequence is from reservoir to chigger to the next (or subsequent) generation chigger to man. (D.S.F.)

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Efficacy of Penicillin in Fusospirochetosis: In a preliminary study carried out at the Naval Medical Research Institute it was found that topical application of sodium penicillin (500 to 1,000 units per c.c.) in 0.85 per cent saline arrested inflammation of the gingivae in oral fusospirochetosis in humans.

Clinically the gingivae became healthy in appearance, and microscopically the fusospirochetal forms were greatly reduced, after 6 to 8 topical applications of sodium penicillin. Applications were made twice daily.

The control treatment using tincture of metaphen (0.5%) followed by sodium perborate mouthwash was not as effective against the fusospirochetal bacterial forms, as demonstrated in smears taken after treatment. The amount of inflammation in those cases treated with metaphen was reduced but clinical evidence of gingivitis was still present. (J.S.R.; T.L.D.)

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The organisms of Vincent's stomatitis, common inhabitants of the mouth, probably rarely attack healthy tissues as primary pathogens. In acute ulcerative stomatitis, a self-limiting disease, these organisms appear to be primary invaders, but some investigators believe that in these cases they may act in symbiosis with a filtrable virus. Infection by Vincent's organisms complicates many conditions which lower the resistance to their attack of the gums and the other mucous membranes of the mouth. Such conditions may be local - as hard and soft deposits around the teeth, "pockets" associated with pyorrhea, caries, malocclusion, etc. - or general - as infectious mononucleosis, granulocytopenia, leukemia, vitamin deficiency, etc. Attention should be directed principally to the primary condition. On the other hand, complicating fusospirochetosis may assume serious proportions and require treatment in itself, especially if it is impossible to alleviate the primary condition. These studies suggest that for this purpose penicillin may be of real value.

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Penicillin and Skin Grafting: The aim of all treatment in third-degree burns is bringing about re-epithelization of the burned areas as promptly as possible. Skin grafts fail to take because of (1) infection, (2) failure to maintain grafts in contact with the recipient site, and (3) lack of adequate blood supply in the recipient site. Of these three causes for failure, infection is the most important.

In a large series of grafts performed on patients with third-degree burns approximately 25 per cent or more of the graft has been lost in one-third of the cases. In contrast, over 98 per cent of the grafts applied to clean recipient sites exhibit satisfactory takes.

Since penicillin is effective against the organisms chiefly responsible for the failure of grafts to take, it seemed important to determine whether its administration at the time of grafting would improve the percentage of takes. Nineteen split-thickness grafts were performed on seventeen patients who received penicillin intramuscularly immediately preceding the graft and for four or five days following the graft. With one exception (an uncooperative alcoholic), from 90 to 100 per cent of the transplanted skin took in every instance. Although penicillin has been administered to only seventeen patients at the time

of skin grafting, the results have been quite striking. (Hirshfeld, Pilling, Buggs and Abbott, OEMcmr-37. To be published.) (CMR Bulletin)

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Penicillin in Smallpox: Secondary infection of the vesicles is believed to be responsible for much of the late toxemia in smallpox and is an important factor contributing to the high mortality rate in the later stage of the disease. It has been previously reported (See Bumed News Letter of May 12, 1944) that "sulfonamide administered throughout the course of the disease has strikingly diminished the degree of secondary infection, lessened the mortality in the late phase of the disease and diminished the degree of pitting and scarring."

Jeans, Jeffery and Gunders treated with penicillin four patients with confluent smallpox who, at the beginning of therapy, were at the height of the eruption. The pustules contained Staphylococcus aureus. Three survived, including one who had never been vaccinated. (Lancet, July 8, '44.)

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Penicillin and Sulfonamides in Pneumococcal Meningitis: Waring and Smith have recently summarized the results of treatment of pneumococcal meningitis at the Harriet Lane Home and the Sydenham Hospital in Baltimore, and conclude that the treatment of choice combines sulfonamide and penicillin therapy.

Between August 1912 and January 1937, 150 cases of pneumococcal meningitis were admitted to the Harriet Lane Home. In spite of stimulants, transfusions and spinal drainage, all died. Between December 1936 and October 1938, eight patients who had this disease were treated with sulfanilamide; one recovered. Comparable results were obtained at the Sydenham Hospital. In October 1938 sulfapyridine became available. The next 60 cases (Sydenham Hospital and Harriet Lane Home) were treated with either sulfonamide alone (sulfapyridine, sulfadiazine or sulfathiazole), or with serum intravenously and sulfonamide combined. Forty-two per cent recovered. There was a striking difference in recovery rate according to the age of the patient. Among the patients under two years of age, 22 per cent recovered, and among those over two years of age, 64 per cent recovered.

Between January 1943 and November 1943, no single therapeutic regime was followed. Some patients were treated with sulfonamide and serum, and others were treated with penicillin alone. Of the ten cases in the Harriet Lane Home only three survived, and these were treated with sulfonamide and serum.

Of 21 cases of pneumococcic meningitis treated in various clinics with penicillin alone and reported (before submission of this paper for publication) to the National Research Council, only seven recovered.

Since November 1943, 12 patients have received combined sulfonamide and penicillin therapy. Eleven recovered and one died. Three of these cases had previously failed to respond to penicillin alone. Eight were less than two years of age.

While 12 cases represent too short a series for statistical analysis, the authors believe that combined use of sulfonamide and penicillin produces results better than those obtained by the use of either agent alone, or by the use of combined sulfonamide and serum therapy.

Type specific serum was used intravenously in four of the 12 cases. In the light of subsequent experience the authors believe that, in all probability, the serum contributed little to the ultimate recovery. They recommend, however, that it be considered as an additional procedure in cases of relapse despite adequate combined chemotherapy. (J.A.M.A., Oct. 14, '44.)

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Head Injuries in Normandy: The following item represents a partial abstract of notes made by Col. F. S. Gillespie, RAMC, during a recent tour of the hospitals in Normandy and England. Col. Gillespie is British Medical Liaison Officer at the Medical Field Service School, U. S. Army, Carlisle Barracks, Pennsylvania.

Patients with injuries of the head, spine or peripheral nerves were sent, as far as possible, to especially selected neurosurgical units in the British and American sectors and to special hospitals in England where neurosurgical teams were available. Only those cases requiring attention because of signs of increasing intracranial pressure were operated on in France. These included patients with subdural hematomata, extradural bleeding or small penetrating wounds which did not have adequate decompression.

Practically all evacuations were by air, and casualties so evacuated frequently arrived in England within 12 hours after they had been seen in neurosurgical units in France. In general, such patients stand air travel well and are not adversely affected by reasonable delay.

When operation was done in France, it was complete operation. Operations of "expediency" are frequently worse than leaving the case untouched. A good rule in the field is "Do all or nothing." Most head cases arrived at neurosurgical units in France within 12 hours of the time of wounding and frequently within 6 hours. On admission such cases were given routine

neurological examination. Wounds, including penetrating wounds, of those judged fit to travel were dressed, dusted with sulfanilamide and penicillin powder, and padded with dressings which were kept in place with adhesive strapping and chin straps or plaster of Paris caps.

Considerable judgment must be used in connection with removal of a small metallic foreign body. One may do more harm in the search for it than it will do if left in situ. Small fragments of bone and pulped brain were removed by mechanical suction. In a few cases clostridial infection of devitalized brain tissue occurred. Most of these cases did very well with free drainage, penicillin and sulfonamides. Sulfanilamide applied locally was found to be less irritating than sulfathiazole. Application of the latter was sometimes followed by convulsions.

Adequate sedation is important in cases which are to be evacuated. Morphine is contraindicated if the respirations are altered. The patient with a head injury should be encouraged to take plenty of fluids and to take food as required.

Upon admission to the neurosurgical units 100,000 units of penicillin were administered intramuscularly followed by 12,000 units at four-hour intervals. Sulfadiazine also was used; an initial dose of 3 Gm. was given by mouth followed by 2 Gm. at intervals of four hours. In unconscious patients the initial dose of (sodium) sulfadiazine was given intravenously.

Fibrin foam was found very valuable in controlling bleeding, both in the brain and into the sinuses.

The mortality at one British head center in France was high - nearly 40 per cent - but the cases were received very early, and many who died would not under ordinary battle conditions ever have reached a head center at all.

Postoperative nursing of head cases presents a very serious problem. These patients need a larger nursing staff than do a corresponding number of ordinary cases. The foot of the bed should be raised 18 inches to facilitate the escape of lung secretions. Suction also should be used for this purpose. The patient must be turned from one side to the other at fairly frequent intervals to promote clearing of the lungs. Pulmonary complications such as aspiration pneumonia are likely to occur if these precautions are not taken.

The cases dealt with in England at a head-injuries hospital did very well and had not suffered from the fact that they did not get to the center for 24 hours or more. Good primary treatment, sulfonamides and penicillin all played their part; no cases have died as a result of infection.

Transventricular wounds had a daily ventricular injection of 8,000 units of penicillin for from three to five days, in addition to the routine parenterally-administered penicillin. Orbito-nasal wounds with brain involvement were sent whenever possible to a special head center in England. Such patients required very extensive operations and frequently needed fascia lata grafts and considerable plastic repair.

When a brain abscess occurred, the abscess was evacuated, and penicillin at a concentration of 1,000 units per c.c. was instilled into the cavity through a tube. As a rule these cases did well.

When there was meningitis or risk of meningitis, penicillin was given intrathecally. Penicillin administered systemically gave highly satisfactory results in scalp infections, in preventing spreading, in brain wounds involving the petrous bone, where bone infection was a hazard, and in severe limb wounds associated with head injuries.

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Physical Signs of Spinal Cord Injury in Patients in Shock: Evans has observed six patients in traumatic shock who had associated spinal cord injury. Each of these patients had vasoconstriction and marked sweating above the level of the cord lesion and pronounced vasocilatation and no sweating below the level of the cord lesion. These observations led him to believe that it is easy by means of these very simple signs to recognize spinal cord injury early in unconscious patients in shock, and that one is thereby allowed rapidly to separate those with spinal cord injury from the others. This is important especially when supplies of blood and plasma are limited. In Evans' experience very large amounts of blood and plasma may be required to resuscitate patients with injury of the spinal cord because of the pronounced increase in the size of the vascular bed below the level of the cord lesion. (Evans, Medical College of Virginia, OEMcmr #10.)

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Axillary Vein Thrombosis: Injection of the stellate and first to fourth dorsal ganglia was followed by rapid improvement in a case of thrombosis of the axillary vein which, over the course of a week, had not responded to conservative therapy. (Bruce, Nav. M. Bull., Oct. '44.)

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Immunity in Mumps: Injection of saliva from mumps patients into the parotid gland of monkeys (M. mulatta) regularly produces clinical mumps in animals not previously exposed to the virus. Minced parotid gland from such inoculated animals is capable of transmitting the infection to other monkeys.

Following inoculation an antigen appears in the parotid gland but in no other organ. This antigen reacts specifically in a complement fixation test with sera of monkeys which have recovered from an attack of mumps. The maximum level of antigen is attained about five days after intra-parotid inoculation.

An antibody which reacts with this antigen appears in the serum 8 to 14 days after infection. This antibody has not been found in the serum of normal monkeys which have had no opportunity for contact with the virus. The concentration of antibody decreases gradually, but may be present in the blood for several months after recovery from mumps.

The quantity of antigen developed in the parotid gland following inoculation of virus may be used as an indication of the animal's susceptibility to mumps.

It has been demonstrated that formolized and alum-precipitated, formolized suspensions of infected parotid glands when injected into normal monkeys cause: (1) production of complement fixing antibody, and (2) some increased resistance (measured by antigen titer in gland) to a subsequent intra-parotid injection of virus.

Human mumps convalescent serum and globulin-concentrate prepared from it show some virus-neutralizing capacity, although neither prevents entirely the formation of antigen in the parotid gland.

The parotid antigen appears to be specific for mumps, and can, therefore, be used in a complement fixation test to determine the presence of mumps antibody in human serum, during an attack of mumps or during convalescence.

Specific dermal hypersensitivity in six patients after recovery has been demonstrated by the injection of heat-inactivated mumps virus. However, this reaction becomes positive only after clinical recovery is complete. (Enders et al., Harvard Univ. - OEMcmr-139.) (CMR Bulletin)

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Delivery of Whole Blood to Theaters of Operation: In August the European Theater of Operations made an urgent appeal for whole blood to be procured in the United States for use in France. In response to this appeal the Surgeons General of the Navy and Army requested the Red Cross to procure through the Washington, New York and Boston Blood Donor Centers up to 1,000 pints of whole blood a day. The first shipment of blood from these Centers was flown to Scotland and from there to France by the Army Air Transport Command on August 21, and since that time there has been daily delivery to E.T.O.

The technical set-up is relatively simple. Every donor that comes in to these Centers is "screen-typed." The typing is performed by placing a single drop of blood in a miniature test tube of saline and then dropping a small amount of this cell suspension on some dried group "O" serum in another miniature tube. The bloods which are not of group "O" will show macroscopic agglutination within a few seconds, and donors of such blood are bled into the regular plasma bottles. The group "O" donors are bled into vacuum bottles containing an acid, citrate, dextrose solution which so preserves the blood that it may safely be used for transfusion for many days. At the end of 21 days it still has approximately 75 per cent of its original value for transfusion purposes. From each bleeding tube a small sample of blood is taken on which a Kahn is performed and the blood group is "proved." This proof-typing is done with extreme care by Army and Navy technicians. Only group "O" bloods are accepted. The accepted bloods are immediately chilled to between 40° and 50° F. and are then packaged in cardboard containers and taken to the airfield where they are again placed in a refrigerator until plane departure time. The cabin temperature is cool on this flight; consequently the blood is not refrigerated. However, it is again placed in refrigerators immediately upon arrival at the airfield in France. Distribution to Field, Base and Evacuation Hospitals is done in refrigerated "marmite" cans. Accompanying each bottle of blood is a sterile expendable donor set which is used only once.

The medical officers in charge of the E.T.O. blood bank state that the blood is arriving in an excellent condition, that it is as well preserved as the blood drawn in England and that the reaction rate has been low.

On November 15 a similar program will be inaugurated on the West Coast and group "O" whole blood in portable light-weight refrigerators will be flown by the Naval Air Transport Service to the West Central Pacific where it will be distributed by plane to Navy ships and Navy, Army and Marine hospitals in the combat area. (Lt. H. S. Blake, USNR, Tech. Director, Blood Donor Service.)

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Glycogenolytic Effect of Insulin in Non-Diabetic Rabbits: Not infrequently when large amounts of dextrose are administered parenterally to an individual whose pancreatic function is presumably normal, insulin is given in addition. It is assumed in some instances that the patient's own insulin will be insufficient to cope with the dextrose so rapidly introduced and that the injected insulin may aid in its utilization. However, Bridge determined the respiratory quotient at hourly intervals during the infusion of dextrose. The administration of insulin did not influence the shape of the curve, suggesting that insulin in these experiments did not improve the utilization of dextrose.

Particularly in hepatic disease has the simultaneous administration of dextrose and insulin been recommended, it being assumed that the glycogenetic action of insulin in the diabetic would be paralleled by similar action in the non-diabetic and that the maintenance of large hepatic stores of glycogen would serve to protect the liver against damage. Insulin in the diabetic individual favors glycogen storage in the liver, probably largely by preventing excessively rapid breakdown of this substance.

Insulin has been shown by Bridge to have an opposite effect (glycogenolytic) in the normal animal. He administered dextrose to normal rabbits by slow continuous infusion. After six hours the animals were sacrificed and liver and muscle slices analyzed with respect to their glycogen content. Insulin administered simultaneously with the dextrose effected no significant change in the total glycogen stores. On the other hand there were a striking increase in the amount of muscle glycogen and a corresponding decrease in the amount of liver glycogen. (Bull. Johns Hopkins Hosp., April '38.)

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Protection Against Poison Ivy: It has been found that the gas-protective ointments, (Army M-5 and Navy S-330), when applied to the skin before exposure, afford under experimental conditions protection against poison ivy. Anti-gas ointment was applied to one forearm of each subject, the other forearm being used as a control. Application of strong extracts, crushed leaves or stems of poison ivy to the control arms produced the characteristic lesions of poison-ivy dermatitis. Such lesions tended to spread during the succeeding seven days. Application of the same substances to the protected arm was followed either by no dermatitis or by a mild reaction which tended to subside spontaneously after one or two days.

It was shown that the effectiveness of the ointments depended not upon their base but upon their active ingredient, which presumably inactives through oxidation the harmful principles of the plant. Under experimental conditions the duration of prophylactic effectiveness was about eight hours. Under field conditions its duration would be expected to be shorter. Some protection may be provided by the ointment if it is applied at the time of exposure or within the next five minutes.

Since theoretically these ointments should be equally effective against the harmful principles of other poisonous plants and against other chemical agents which may cause contact dermatitis, field tests appear to be warranted. (Sulzberger et al., OEMcmr-103.)

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Among the plants and trees which may produce dermatitis in susceptible individuals are poison oak and ivy, the poison elder or dogwood, the Western poison oak, the Chinese lacquer, the West Indian cashew, the Oriental cashew, the mango, the "marking nut" and the manzanillo (beach apple) trees. (See Bumed News Letters of Sept. 3, 1943, Oct. 1, 1943, and June 9, 1944.)

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The Common Skin Diseases VIII: Dermatitis Venenata:

Etiology: Although the term "dermatitis venenata" is usually applied to a skin eruption due to contact with an irritant or sensitizing agent of plant origin (poison ivy, etc.), it is applicable equally to eruptions due to contact with any external agent. The substances that can produce such eruptions are numerous, and no attempt will be made to catalog them completely.

Clinical Features: The eruption is usually of sudden onset and is at first confined to the exposed areas. It may be vesicular or erythematous in character. Itching is usually pronounced. It may remain localized or may spread to involve large areas. A brief outline of the areas commonly involved and the causative agents most often affecting each area follows:

1. Face, eyes, neck: The eruption may be vesicular or erythematous. The eyelids are often swollen. Itching is usually intense. If the symptoms are worst in the morning, one should suspect a scalp or face preparation applied at night (hair tonic, face cream, insect repellent, medication, etc.). If the symptoms are worst during the evening, one should suspect an irritant encountered during the day. Poison ivy and other plant irritants often produce intense edema and vesiculation of the face. In WAVE personnel, an eruption involving the eyelids, cheeks and neck should make one suspect hair preparations, perfumes, jewelry and nail polish.

2. Trunk: Clothing is the most common offender. The material itself, or the dye or a cleaning agent may render the clothing irritating. Resinous fillers used in shorts have been reported as a frequent cause of underwear dermatitis. The eruption is usually erythematous, follicular, scaly and itchy. The pressure-points (shoulders, belt-line, and hips) are most frequently involved.

3. Axillae: The eruption is red, edematous and scaly. If the apex of the axilla is affected, one should suspect deodorants or medication. If the apex is relatively clear, one should suspect the clothing.

4. Genitalia: The eruption may be vesicular or erythematous. Edema may be pronounced. Poison ivy and other plant eruptions frequently involve the penis owing to handling during urination. Prophylactic ointments, condoms,

spermatocidal jellies (used by partner) and medication for pediculosis pubis are a few of the possible agents. The skin here is extremely thin, and otherwise innocuous medication (such as 2 per cent Tr. iodine) will often produce a severe local dermatitis.

5. Extremities: Plant poisons, clothing, cleansing agents, medication, adhesive tape, wrist-watch straps, and metals (jewelry) are a few of the possible causes.

6. Feet: The dorsal surface of the big toe is often involved. The eruption may be vesicular or simply erythematous. Itching is present. One should suspect shoe leather, shoe polish, shoe dye, socks, foot powder, etc. These cases are often mistaken for fungus infection in spite of the lack of interdigital involvement.

Diagnosis: The location, gross appearance, history of exposure, and itching will usually suggest the possibility of dermatitis venenata. Patch-testing can be employed as a diagnostic aid in obscure or unusual cases. The technic is simple but interpretation of the results is occasionally difficult.

Technic: Apply a small piece of the suspected material (1/4 inch square) to the upper inner part of the arm, forearm or back. If the suspected irritant is a powder or liquid, impregnate a small piece of gauze or blotting paper with the substance. Cover with a 1-1/2 inch square of wax-paper or cellophane. Strap to the skin with adhesive tape. Remove at the end of 48 hours and read. Positive reactions will range from a mild but sharply circumscribed erythema to an intense vesicular or bullous reaction.

Cautions to be observed:

1. One should not employ patch tests in acute or widespread eruptions. It is wiser to wait until the dermatitis has completely subsided.

2. If the exciting cause is obvious or is easily eliminated, there is no need for patch-testing.

3. If the suspected agent is a chemical substance, one should consult a standard text to determine the recommended dilution for patch-testing. Sulzberger's "Dermatologic Allergy" and other sources will give these dilutions.

4. If intense itching or burning develops at the test site, the agent must be removed at once.

5. Negative tests should be observed at the end of additional 24-and 48-hour intervals for delayed reactions.

Treatment: Wet dressings of boric acid, solution of aluminum acetate 1:20, or of potassium permanganate 1:5,000 are best for most acute cases. These should be used ice cold if itching is severe.

Following and between the wet compresses, calamine lotion containing 0.5 to 0.75 per cent menthol may be applied. The use of the lotion should be delayed until weeping has subsided; otherwise, cement-like crusting will result.

On the face and eyes, plain white petrolatum or 5 per cent boric acid ointment will prove comforting and, if desired, the cold wet dressings can be applied over the ointment.

It should be remembered that successful treatment of these cases depends upon the removal of the irritant from the skin and not upon the medication employed.

If the patient is seen within 10 to 20 minutes following exposure to a plant to which he is known to be sensitive, thorough scrubbing with soap and water followed by washing with alcohol will sometimes prevent the appearance of the dermatitis. Controversy exists also concerning the value of prophylactic and therapeutic use of injectable plant extracts. (J.M.S.)

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Sulfathiazole, Microcrystalline Not To Be Added To Supply Catalog, Medical Department, U. S. Navy: For information and guidance the following report of the Naval Medical Materiel Board on September 4, 1944, to the Chief of the Bureau of Medicine and Surgery is published:

"Findings: Inquiry to the various manufacturers of sulfathiazole reveals that there is no understanding of just what constitutes a true microcrystalline sulfathiazole. At present we have stock No. S1-3915, sulfathiazole, powdered, 1/4 lb. bot. in the Supply Catalog. The crystals of this item are of microscopic size but are not of uniform shape and size. Capt. L. K. Ferguson (MC), USNR, Naval Hospital, St. Albans, has examined samples of our stock item, and has declared it to be suitable for use where microcrystals are indicated.

"There have been numerous reports of good results with 'Microform', a microcrystalline powder of sulfathiazole which is proprietary to Smith, Kline and French. These microcrystals are produced by the induction of crystallization with sonic vibrations. The average size of such crystals is 2 x 2 x 5 micra, the maximal linear dimension of any crystal not exceeding 20 micra. Each crystal is coated with gelatin.

"When tested in powder blowers for ability to form light frostings, it has been found that our stock item compares favorably with the 'Microform' powder.

"Lockwood (Surg., Gynec. and Obstet., July '44, Vol. 79, No. 1) found that experimental wounds treated with sulfanilamide showed development of tensile strength at exactly the same rate as control wounds. However, when the less soluble sulfonamides were used, including sulfadiazine and sulfathiazole in both microcrystalline and macrocrystalline forms, there was a marked retardation in healing time, particularly striking at the eighth day. These findings are in accordance with the latest recommendations of the National Research Council.

"It is generally accepted that sulfonamides will continue to be used topically in first aid and under some other circumstances (Ref. Bumed News Letter, Vol. 4, No. 3, p. 2). Sulfanilamide, sulfathiazole, and sulfadiazine for topical application, now listed in our Supply Catalog, are considered adequate for these purposes. In the face of the National Research Council's recommendations and the trend of current literature, it is not considered advisable to place in the Catalog additional sulfonamides for topical application.

"Recommendation: 'Microform', crystals of sulfathiazole, is not recommended for addition to the Supply Catalog."

The above recommendation was approved by the Surgeon General on September 14, 1944. Accordingly Microcrystalline Sulfathiazole is not being added to the Supply Catalog. (M. Supply News Letter, Oct. 1, '44.)

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Biopsy of Malignancy Should Accompany the Patient: A letter from Captain A. H. Dearing (MC), USN, Commanding Officer of the U. S. Naval Hospital, Oakland, California, calls attention to the fact previously mentioned in the Bumed News Letter that the provisions of #2178, Manual of the Medical Department, U. S. Navy, are often not complied with. This paragraph directs that pathological tissue and/or slide accompany each patient in whom the diagnosis of malignancy has been established. It is most urgent that this be accomplished in every case.

In case a biopsy has been made, the specimen of the tissue and specimens mounted on slide for microscopic examination should be sent. Reasons: (1) No treatment for malignancy is instituted on the basis of hearsay or indefinite evidence in any scientific institution; (2) the microscopic architecture of a lesion indicates its radiosensitivity or resistance. Descriptions of lesions in words are inadequate. Scientific treatment is impossible without direct examination of the microscopic structure of the lesion by the person responsible for outlining radium, X-ray, or surgical treatment, determining doses and relative efficacy of different methods of treatment. When patients are received without specimens, biopsy must be repeated to save time in correspondence - this at additional risk of precipitating metastasis through the lymphatics and bloodstream. One biopsy should suffice.

Potency and Storage of Biologic Products: In the Bumed News Letter of September 15, 1944, the next to the last sentence of the last paragraph on page 37 reads as follows: "Freezing should be avoided, except in the case of smallpox, rabies and yellow fever vaccines." We have been advised by the National Institute of Health that freezing should be avoided in the storage of rabies vaccine, as it destroys the immunizing value of the vaccine.

The National Institute of Health has recently extended the period of assumed potency of scarlet fever streptococcus toxin for Dick test from 6 to 12 months and of typhus vaccine from 12 to 18 months.

The period of assumed potency of antiplague and of typhoid vaccine should have been given as 18 months and not as 12 months.

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Reports on Research Projects at the Naval Medical Research Institute Available for Medical Officers:

NMRI-61: Evaluation of Methods for Cleaning and Sterilizing Oxygen Masks.
Summary: 1. Sterilization and/or cleaning methods using sunlight, boiling in water or scrubbing with soap, water and brush were not included in this study because of difficulties encountered and the poor results reported on the original use of these methods.

2. The effectiveness of aqueous solution of merthiolate (1:1,000 dilution) for sterilizing masks as reported by the Army Air Forces was confirmed. Seventy per cent ethyl alcohol was somewhat less effective.

3. Repeated use of the solution of merthiolate did not injure the masks.

X-334: The Effect of Calcium Pantothenate on the Growth of Plasmodium Gallinaceum in the Chick, Report No. 1.
Summary: Baby chicks were placed on purified diets, either (a) deficient, (b) adequate, or (c) more than adequate in pantothenic acid. After injection of a passage dose of Plasmodium gallinaceum, parasite counts were made and the time of peak parasitization was determined.

Conclusion: Plasmodium gallinaceum grows more rapidly and reaches its peak value sooner in chicks fed adequate amounts of pantothenic acid than in those fed a diet which is deficient in pantothenic acid.

X-414: Micro-Analytical Method for Antimony in Lymph, Blood, Urine and Tissue, Report No. 1.

An improved method has been developed for determining small amounts of antimony in biological materials.

1. Certain small but important changes have been made in the analytical procedure developed by Fredrick (1) and modified by Webster (2) for the determination of antimony. These changes are:

a. The use of potassium persulfate as an oxidizing reagent in the digestion.

b. The colorimetric determinations of the final rhodamine antimony complex at 5650 Angstrom units. (This wave-length was selected because the peak of the absorption curve of the rhodamine-antimony complex when measured was found to lie at 5650 A.)

2. The method is simple and accurate over the range of 2 to 40 gamma and is applicable to small samples (0.2 ml.) of biological materials.

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Medical Field Research Laboratory Progress Reports:

BuM&S Project #X-307 (Sub. No. 54). Design and Testing of a Plasma and Emergency First-Aid Tent for Combat Use: As a result of almost universal demand for a tent of some nature to permit the Medical Department to function after dark in an attack zone, a satisfactory tent was evolved. It was found that a neoprene-coated balloon cloth would satisfy the requirements. Conclusions after field testing of this tent are as follows:

An emergency first-aid and black-out tent has been constructed and tested. The weight of this tent including four lines is six pounds fifteen ounces. Its minimal weight, as well as its small size, meet all requirements satisfactorily.

The intended uses and possible applications of this tent in other organizations are as follows:

1. Protection of casualties and aid-station personnel from inclement weather, flies attracted by blood, mosquitoes and bright sunlight. Aid-station personnel and casualties may need protection during tropical downpours of rain. Eight casualties lying side by side on ponchos or blankets may be sheltered by draping the tent over them.

2. Provision of satisfactory conditions for adequate examination of casualty, securing hemostasis, dressing and redressing wounds and administering plasma.

3. Maintenance of necessary black-out conditions. Sufficient light may be had using one flashlight directly on the operative area. Additional light may be had by suspending another flashlight from the inside ties.

A name for the tent which is more descriptive than the original title is "Emergency First-Aid and Black-Out Tent."

Possible other uses: (a) Protection of medical gear, (b) shelter and working space for command-post personnel, (c) shelter and black-out protection for telephone switchboard or radio and operator, (d) black-out protection of artillery observers during darkness when they are using light to plot observations. As an emergency measure this tent may be turned upside down to serve as a lining in a water catchment pit.

This tent has been approved and is now in production. One tent is to be furnished to each Battalion and Regimental Medical Department and one to each Medical Company.

* *

BuM&S Project #X-336 (Sub. No. 61). Development and Testing of the Gallagher Poleless Field Stretcher: Up to the time of the initiation of this project no suitable litter had been in use which could be carried in large quantities by combat units on extended forays. To meet these requirements a non-rigid, fabric litter of 6.89 ounce nylon has been developed by this laboratory. It incorporates snaps for attachment of the standard USMC poncho as a cover sheet, slings and crotch straps for the hoisting or lowering of a casualty over steep embankments or cliffs, six cloth loops for carrying straps and overlapping hems for insertion of poles if desired. Its weight is 2 pounds 4 ounces; its bulk is 130 cubic inches under 36 pounds pressure.

The litter was field tested by personnel from the Laboratory and the Medical Field Service School at this post. It was found to be strong, durable and adaptable to all types of terrain and methods of carry. It is easily maintained in a sanitary condition. Protection from the elements, mosquitoes and flies, and retention of body warmth in patients suffering from shock are provided for by the addition of a standard poncho which snaps on.

It is believed the light weight, small bulk and adaptability with regard to variable methods of carry, number of bearers available and type of terrain to be traversed, will make this litter ideally suited to use by combat troops. The proposed litter possesses maximal flexibility when carried

without poles. With the insertion of the carrying poles the litter becomes semi-rigid for use in transporting wounded over cleared ground.

This litter has been approved and is being placed in production.

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BuM&S Project #X-309 (Sub. No. 55). Development of an Improved Hospital Corps Pouch - Field Units. The standard Field Medical Unit #3 consists of two pouches hung by harnesses, each one suspended over the wearer's hips. This field unit is universally considered unsatisfactory owing to the fact that it chafes the wearer's thighs and affords bulk at the sides of the wearer causing him to walk with his arms akimbo. Another disadvantage is that it has projection in depth, rather than width, without segregation. This is especially undesirable in that the narrowness of the pouches makes items hard to find and there is no segregation of contents.

An improved Hospital Corps Pouch-Field Unit has been designed, tested and found to be satisfactory. It has been developed by modifying the standard Marine Corps knapsack M-1941.

This pouch will hold the Medical Department Field Supply Catalog contents listed for unit #3, plus 22 small battle dressings and 12 compressed 3-inch bandages or items of similar bulk. The unit is partitioned and items frequently needed in emergency are placed in tape pockets where they are readily accessible. The unit is 1-1/2 lbs. lighter than the old unit #3 and may be carried in the same manner as the lower half of the Marine Corps Pack M-1941, or, by the addition of a standard issue belt, it may be used in the same manner as the old Hospital Corps Pouch.

Its primary advantages are increased accessibility of needed items under all conditions, and added comfort and freedom of movement for the corpsmen. It retains the advantage of being relatively waterproof. This pouch has been approved and is being placed in production. (Med. Field Research Lab., Camp LeJeune, N. C., Oct. 5, '44.)

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Requisition of Blood Typing Serum: Blood Typing Serum is no longer supplied by the Naval Medical School. This material may be obtained from the Naval Medical Supply Depot, Brooklyn, New York, under the following stock numbers: S1-815 Blood Grouping globulin A (Anti B) in 5 c.c. vials; and S1-816 Blood Grouping globulin B (Anti A) in 5 c.c. vials. (P.W.W.)

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Requests for Laboratory Manuals: A list of laboratory manuals published by the Naval Medical School was included in the list of available publications in the Bumed News Letter of September 29, 1944. Since then the Naval Medical School has received numerous requests from individual medical officers and hospital corpsmen for laboratory manuals for personal use.

The supply of these publications is not adequate for such wide distribution. Upon the request of the senior medical officer, laboratory manuals will be supplied to any medical department activity in sufficient number to fill the requirements of medical libraries and laboratories and for instructional use.

The Naval Medical School will endeavor to supply all naval hospitals, convalescent hospitals, base and fleet hospitals, hospital ships and dispensaries having laboratory facilities, with new or revised manuals as they are published without waiting for a request.

The following publication should have been included in the list of laboratory manuals available:

"Pathological Methods and Histopathological Technique" - Type: "Offset Notes", Method of Distribution - "D". (P.W.W.)

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Record of Professional Military Assignments Issued by American Specialty Boards: Medical officers who are prospective applicants for certification by any one of the American Specialty Boards should obtain a copy of the "Record of Professional Assignments" issued by the American Boards.

This booklet provides space for a log of assignments covering an officer's naval career, authenticated by his commanding officer in each of his various stations. It describes procedures pertaining to credit for military service, and constitutes part of the credentials to be submitted later to any Board on application for certification.

Copies of this "Record of Professional Assignments" may be obtained without charge by applying to the Secretary of the American Board before which the officer expects eventually to appear. The addresses of the secretaries of the various specialty boards are as follows:

1. Anesthesiology: Dr. Paul M. Wood, 745 Fifth Avenue, Room 1503, New York 22, New York.
2. Dermatology and Syphilology: Dr. George M. Lewis, 121 East 60th Street, New York, New York.
3. Internal Medicine: Dr. W. A. Werrell (Acting Sec'y), 1301 University Avenue, Madison 5, Wisconsin.

4. Neurological Surgery: Dr. Paul C. Bucy, 912 South Wood Street, Chicago 12, Illinois.

5. Obstetrics and Gynecology: Dr. Paul Titus, 1015 Highland Building, Pittsburgh, Pennsylvania.

6. Ophthalmology: Dr. S. Judd Beach, 704 Congress Street, Portland 2, Maine.

7. Orthopedic Surgery: Dr. Guy A. Caldwell, 3503 Prytania Street, New Orleans 15, Louisiana.

8. Otolaryngology: Dr. Dean M. Lierle, University Hospital, Iowa City, Iowa.

9. Pathology: Dr. F. W. Hartman, Henry Ford Hospital, Detroit, Michigan.

10. Pediatrics: Dr. C. Anderson Aldrich, 115-1/2 First Avenue, S. W., Rochester, Minnesota.

11. Plastic Surgery: Dr. James Barrett Brown, 400 Metropolitan Building, St. Louis, Missouri.

12. Psychiatry and Neurology: Dr. Walter Freeman, 1028 Connecticut Avenue, N.W., Washington, D. C.

13. Radiology: Dr. B. R. Kirklin, Mayo Clinic, Rochester, Minnesota.

14. Surgery: Dr. J. Stewart Rodman, 225 S. 15th Street, Philadelphia, Pennsylvania.

15. Urology: Dr. Gilbert J. Thomas, 1409 Willow Street, Minneapolis, Minnesota.

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Definition of the Term "Dependents:" Several inquiries have recently been received by the Bureau with respect to the meaning of the term "dependents" as it relates to hospitalization or dispensary care.

Article 1185 (5), Navy Regulations, 1920, reads as follows:

"The family of an officer or enlisted man shall include only those relatives who are dependent upon him for support, and not persons employed by him, and for the purpose of this article the term 'dependents' shall include only a lawful wife, unmarried dependent child (or children) under age 21, and the mother and father of the officer or enlisted man if in fact dependent; as to the Navy Nurse Corps (female), unmarried dependent child (or children) under age 21, and the mother and father of the nurse if in fact dependent. 'Child', or 'children' shall include a legitimate child, stepchild, or adopted child. The widows of deceased naval personnel, active or retired, also shall be entitled to the medical care authorized by this article."

The Secretary of the Navy further has specified that the term "widows" shall include "widows of personnel of the regular Navy and Marine Corps; the widow of any member of the reserve forces who dies while on active duty which is permanent in character; and the widow of any member of the reserve forces who dies while on active duty during war or national emergency."

Public Health Foreign Reports:

Disease	Place	Date	Number of Cases
Plague	Bolivia	July '44	1 (1 fatal)
	French West Africa	Aug. 19-26, '44	36 (32 fatal)
		Aug. 26-Sept. 2, '44	38 (31 fatal)
	Palestine	Aug. 12-19, '44	8
Smallpox	Bolivia	July '44	103 (44 fatal)
Typhus Fever	Basutoland	July 11-30, '44	72 (14 fatal)
	Bolivia	July '44	58 (11 fatal)
	Egypt	July 29-Aug. 5, '44	124 (16 fatal)
	Hungary	Aug. 12-19, '44	25
Yellow Fever	Gold Coast	Aug. 14, '44	1 (fatal, suspected)
		Aug. 20, '44	1 (fatal, suspected)
	Ivory Coast	Aug. 1-10, '44	1 (fatal)

(Pub. Health Reps., Sept. 22 and Oct. 6, '44.)

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ALNAV 189 6 Oct 1944

Subj: Absence Due to Venereal Disease

Act 27 September 1944 repeals section 2 act approved 17 May 1926. All instructions relating to loss of pay, as distinguished from loss of time, while absent from duty due to venereal disease are rescinded effective 27 September 1944. Loss of pay under provisions paragraph 3, General Order 20, or article 121 (3) (6), Coast Guard P. and S. I., not affected by foregoing.

--SecNav. Ralph A. Bard

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To: All Ships and Stations. BUMED-YS-aft
A2-2/EN10(113-38)

Subj: Additions and Corrections, Manual of the Medical Department - Diagnostic Nomenclature of Diseases and Injuries, Chapter 15 and Appendix A. 18 Sep 1944

Refs: (a) Manual of Medical Department of U.S.N., ch. 15.
(b) Manual of Medical Department of U.S.N., App. A.

1. In reference (a), paragraph 2405(n), line 6, change to read:

"PREVIOUSLY TAKEN UP": State "Yes" if EPTE and previously admitted to the sick list of the Navy for this identical diagnosis; otherwise, state "No."

2. In reference (a), paragraph 2408(d), delete: "Except following receipt from transfer."

3. In reference (a), paragraph 2402(e), change: "mental observations" to "rations."

4. In reference (a), paragraph 2407, add:

(p) Convalescent Leave - When enlisted personnel are granted Convalescent Leave the diagnosis shall be changed (C) to No Disease (Convalescent Leave), readmitted (RA) under this diagnosis of no disease and transferred (T) to Convalescent Leave. The Hospital to which the patient returns from leave shall readmit (RA) him, as No Disease (Convalescent Leave). If no additional treatment is necessary for the original diagnosis the patient shall be disposed of (D) without further change.

5. In reference (a), paragraph 2417, add:

AOF - Non-flying commissioned officers (not aviators) ordered to duty involving flying who have flight orders such as naval observers, navigators, bombardiers, flight surgeons, aviation medical examiners, and other commissioned officers.

AOG - Non-flying commissioned officers (not aviators) without flight orders.

6. In reference (b), add the following diagnoses:

2590. Killed or died while prisoner of war.
2599. Injuries, type unknown.
2608. Poisoning, prophylactic or suppressive. State compound used and for what purpose.

7. In reference (b), correction of misspelled diagnoses:

In class groups:
1958. Pruritus. State location.
2703. Absence, acquired, teeth (or tooth).
In alphabetical listing of titles:
611. Conjunctivitis, Follicular.
822. Pharyngitis, Acute.
526. Pharyngitis, Chronic.
1958. Pruritus. State location..

--BuMed. L. Sheldon, Jr.

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To: All Ships and Stations.

BUMED-R1-JLA
P3-5/PT(063-43)

Subj: Physical Requirements for Officers and Enlisted Men for Motor-Torpedo-Boat Training, Establishment of.

20 Sep 1944

1. Standards of physical requirements for officers and enlisted men for motor-torpedo-boat training are established herewith as follows:

(a) Standards: Physical requirements are those for general service with especial attention to the following conditions:

(1) Age: Men between the ages of 19 and 35 shall be selected for this duty. Candidates must have a high degree of physical stamina.

(2) Vision: The vision of officers shall be a minimum of 18/20 in each eye; enlisted men of the seamen's branch also 18/20 in each eye, including gunner's mates, torpedomen, quartermasters, radiomen, and seamen; all other candidates shall have a minimum vision of 16/20 in each eye, including motor machinist's mates, radarmen, ship's cooks, and firemen. Vision requiring the use of glasses is not permissible.

(3) Night vision: All officers and enlisted ratings who will be assigned to night lookout duty must have a satisfactory degree of night visual acuity as determined by tests with the radium plaque adaptometer.

(4) Color vision: Normal color perception shall be required of all personnel. For this determination the correct recognition of all plates in groups I, II, and III of the American Optical Company Test (First Edition 1940) shall be required.

(5) Teeth: A complete dental examination shall be conducted by a dental officer. Definite oral disease and generally unserviceable teeth shall be cause for rejection. Minimum requirements shall be 20 vital serviceable teeth or fixed bridge replacements with at least 4 opposing molars and 4 opposing incisors. Removable dentures not acceptable.

(6) Nose and throat: The nose and throat shall be carefully examined; chronic inflammatory conditions shall be sufficient to reject until such defects are remedied.

(7) Ears: Acute or chronic disease of the middle or internal ear or ruptured eardrums shall disqualify. The acuity of hearing in each ear shall be 15/15 by the whispered voice, and 20/20 by coin click.

(8) Skeletal system: Marked or symptomatic defects of feet, knees or back shall disqualify.

(9) Gastrointestinal system: Ulcer, emotional stomach, or intestinal disorders shall disqualify.

(10) Diseases of the skin: Any definitely chronic skin disease shall be disqualifying. Mild acne is not disqualifying.

(11) Nervous system: A neuropsychiatric examination shall be given to determine the temperamental fitness for this type of duty. A history of train, car, air or motion sickness or chronic seasickness shall disqualify. Motivation shall be real and wholly voluntary, and stability and normal intelligence are required. Personality traits which might militate against satisfactory adjustment under close living conditions for extended periods in advanced combat areas shall disqualify.

(b) The above standards are to be rigidly adhered to in determining physical fitness prior to entry into motor-torpedo-boat training. However, in the determination of subsequent physical fitness, minor or temporary deficiencies should be waived when their existence does not preclude expectation of satisfactory performance of duty.

2. The foregoing shall become a part of chapter 11 of copies of the Manual of the Medical Department now on hand. It will be included as a numbered paragraph in subsequent revisions of the Manual. --BuMed. L. Sheldon, Jr.

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To: All Ships and Stations. BUMED-Y-DEC P2-2/P3-1(092)

Subj: Impregnation of Clothing for Protection against Tsutsugamushi Disease (Scrub Typhus). 26 Sep 1944

1. The only effective method available at this time for protection of personnel against tsutsugamushi disease (scrub typhus), which is transmitted by mites (chiggers), is impregnation of clothing with an emulsion of dimethylphthalate.

2. The areas where the infected mite is found are roughly as follows: New Hebrides; Solomons; the East Indies; the Philippine Islands; the Malay States; Thailand; French Indo-China; Southern China; Formosa; the Pescadores Islands; India; Ceylon; Burma; Japan; and parts of the Province of Queensland, Australia.

3. When in the opinion of the various theater commanders or other competent authority the danger of acquiring scrub typhus is potentially of serious degree, or where scrub typhus is actually occurring in such numbers as to warrant the below procedures, it is directed that the outer clothing and bedding, such as sheets and blankets, of all naval personnel stationed or landing in the above areas (paragraph 2) or other areas suspected of being mite infested be impregnated with an emulsion of dimethylphthalate.

4. Instructions for impregnation of uniforms and bedding.

a. Materials required to treat 100 uniforms:

Dimethylphthalate	7.5 quarts
Soap, laundry, ordinary, bar	6 pounds (approx. 7 cakes)
Water	35 gallons
55 gallon oil drum (empty)	1
35 gallon G.I. can or similar container	1
G.I. egg whip (wire)	1

(Makes 37 gallons of emulsion containing 5% dimethylphthalate and 2% soap.)

b. Procedure:

(1) Cut soap into small pieces and boil in 10 gallons of water to dissolve. Then add 25 gallons of cold water.

(2) Pour 4 or 5 gallons of this soap solution into a G.I. can or similar container, add 7.5 quarts dimethylphthalate slowly while whipping vigorously with an egg whip to make a creamy concentrate.

(3) Pour this concentrate back into the drum of soap solution and stir to make the finished emulsion.

(4) To prevent settling it is necessary to stir the emulsion slowly while clothing is being dipped.

(5) Put socks in trouser pockets. Immerse clothing, including those parts held in hands, in the emulsion and wring out over a second container to save excess liquid. Hang uniform up to dry.

(6) Only dry uniforms should be dipped to assure adequate treatment and to avoid diluting the emulsion.

5. Procurement.

a. Pure dimethylphthalate in 1-gallon containers is listed in the Medical Supply Catalog under the following designation: "Insect Repellent; liquid (for mosquitoes, biting flies, gnats, fleas, chiggers (mites)), Stock No. S13-449", and may be procured by submitting NavMed Form 4 (or dispatch by ships and stations in foreign countries) to the nearest naval medical supply depot or medical supply storehouse.

b. Soap, laundry, ordinary, bar, is listed in Federal Stock Catalog as No. 51-S-1645 (Fed. Spec. No. P-S-591a) and should be procured from local supply officer.

6. General comments.

a. The recommended amount of dimethylphthalate to be procured is approximately at the rate of 50 gallons per month per 1,000 men, with automatic replenishment.

b. For preparing large quantities of emulsion, a simple procedure is to make a 25% emulsion of dimethylphthalate in 10% soap solution and mix one part of this concentrate with four parts of water.

c. The clothing and bedding should be thoroughly dry before use. If practicable, a symbol designating impregnation and date should be attached to treated articles. Under ordinary circumstances, impregnated articles will retain their effectiveness after three washings.

d. An impregnated uniform retains its effectiveness for one month unless laundered by hard scrubbing with soap and hot water. It loses its effectiveness ordinarily if exposed to swiftly running fresh water for 15 minutes, or to salt water for 30 minutes.

e. A cold-water rinse, sun, rain, walking in wet grass, or excessive perspiration do not seriously impair the protective qualities.

f. Impregnated bedding remains effective, under ordinary circumstances, if unlaundered, for at least 2 months.

g. It is recommended that drawers be worn at all times while wearing treated uniforms, since the dimethylphthalate may irritate the scrotum.

h. The insect-repellent mixture issued in 2-ounce bottles, Stock No. S13-450, is not pure dimethylphthalate, will not emulsify, and should not be used for impregnation.

7. As a general rule it is recommended that uniforms be treated once a month.

--BuMed. Ross T McIntire.

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To: All Stations Within the Continental Limits.

BUMED-Y-LEE
P2-3/P3-1(104-42)

Subj: Filariasis Registry; Establishment of.

6 Oct 1944

1. A Filariasis Registry has been established with headquarters at Marine Barracks, Klamath Falls, Oregon, and it is anticipated that a representative of the Registry will visit various activities for the purpose of interviewing and examining all personnel with this disease.

2. The purpose of the Filariasis Registry is to make and keep a record of all personnel, Navy and Marine Corps, having a diagnosis of Filariasis; to keep all such patients under surveillance as long as they are on active duty. The information obtained is necessary to evaluate the extent of the problem the disease presents, as well as to furnish an adequate follow-up system necessary to the ultimate disposal and handling of this personnel.

3. It is directed that all health records be examined immediately and if the entry of Filariasis has been made, the name, rate or rank, and station to which the individual is attached shall be forwarded to the Registry with a notation as to the findings existing referable to Filariasis, particular attention being directed towards lymphadenopathy, lymphangitis and lymphedema.

4. Health records of all personnel with Filariasis shall be stamped in red ink at the top of the front of the outside cover with the word, "Filariasis". In addition, the following statement shall be stamped on the appropriate clinical sheet, "Filariasis, notify Filariasis Registry, Marine Barracks, Klamath Falls, Oregon, concerning any objective findings or other pertinent information referable to Filariasis in compliance with BuMed Letter, P2-3/P3-1(104-42), dated 6 October 1944." The Registry likewise will be notified at the time personnel are attached, transferred, discharged from the Service, or released from active duty.

5. The Registry will be notified each time an individual with Filariasis is admitted to the sick list for any cause. The reason for admission shall be furnished, and in addition a statement shall be made concerning any sign or symptom referable to Filariasis. A note to the effect that the Registry has been notified of the admission shall be entered in the health record.

--BuMed. Ross T McIntire.

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To: Commandants of Naval Districts and River Commands, Chiefs of Naval Air Functional Training, and Commandants and Commanding Officers of Major and Minor Shore Stations.

Pers-51312-dmh, JF
4 Oct 1944

Subj: Ship's Service Department soda fountain; improvement of nutritional quality of items sold.

Ref: (a) BuMed ltr BUMED-X-MLD:III/A11/L16-8(021) to BuPers of 9 Aug 1944.

1. Following a study of nutritional problems at a large Naval Training Station the Bureau of Medicine and Surgery has brought to the attention of this Bureau the importance of food articles sold in Ship's Services and their relation to the health and well-being of naval personnel patronizing Ship's Services.

2. It is suggested that in all Ship's Service soda fountains milk be made available to meet every demand of the clientele and that the sale of milk be fostered by such means as the display of placards and other advertising material as may be available from local dairies.

3. It is further suggested that fresh fruit, such as oranges and apples, be placed on sale and prominently displayed. Due to the perishability of fresh fruit, purchases should be made with due regard to sales probabilities and the volume of such purchases increased as the stimulated demand justifies.

--BuPers. R. A. Koch.

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